



Installation Guide
10BASE-T/100BASE-TX
8-Port Dual-Speed Hub
Model: KF-8D

DOC.980329-KF8D-K
P/N: 750-0109-001

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8-Port Dual-Speed Ethernet/Fast Ethernet Hub

Installation Guide

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TRADEMARKS

Ethernet is a registered trademark of Xerox Corp.

WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTICE:

(1)The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(2)Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

CISPR A COMPLIANCE:

This device complies with EMC directive of the European Community and meets or exceeds the following technical standard.

EN 55022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment. This device complies with CISPR Class A.

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CE NOTICE

Marking by the symbol **CE** indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EN 55022: Limits and Methods of Measurement of Radio Interference characteristics of Information Technology Equipment.

EN 50082/1:Generic Immunity Standard -Part 1: Domestic Commercial and Light Industry.

EN 60555-2: Disturbances in supply systems caused by household appliances and similar electrical equipment - Part 2: Harmonics.

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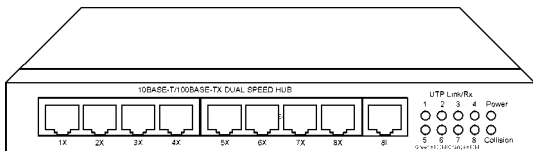
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1. Introduction

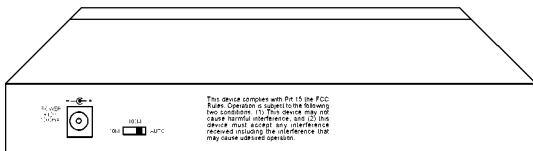
KF-8D dual-speed Fast Ethernet/Ethernet hub is designed to allow easy and flexible migration from 10Mbps Ethernet to 100Mbps Fast Ethernet. The hub complies with IEEE 802.3 and IEEE 802.3u repeater specifications and supports 10Mbps and 100Mbps connectivity over UTP cabling in the same hub. The hub provides 8 dual-speed TP ports. All of the TP ports support auto-sensing function that allows the hub to detect the connection speed automatically.

The hub also provides complete diagnostic LED indicators to indicate the activity status of the hub and network ports.

The following figure illustrates the front and rear view of the hub:



Front Panel



Rear Panel

Features

- Complies with IEEE 802.3 and IEEE 802.3u standard for Ethernet/Class II Fast Ethernet repeater
- Provides a configuration switch (10M/100M/AUTO) to set all 8 TP ports as 10BASE-T ports, 100BASE-TX ports or 10/100 auto-sensing ports.
- In AUTO mode, each TP port can support either an Ethernet 10Mbps connection or a Fast Ethernet 100Mbps connection with auto-sensing the connection speed.
- The hub provides one uplink jack that allows easy linking of two hubs via straight-through UTP cable.
- The TP ports are implemented with auto partition and reconnecting function to protect the network from failure caused by consecutive collisions from a specific port.
- The jabber function is implemented to prevent reception of illegally long packet, which would degrade network performance.
- Compact design suitable for small workgroup
- Specifications

Power: +12V 1000mA min.

Dimension: 194 mm x 116 mm x 20 mm (WxDxH)

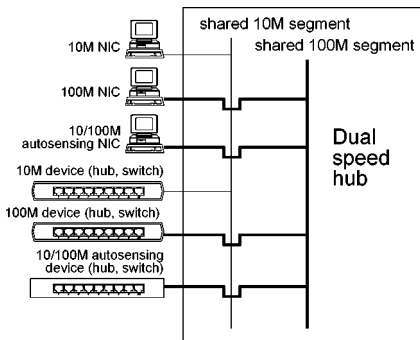
Temperature: 0° to 40°C when operating

Humidity: 10% to 90% non-condensing when operating

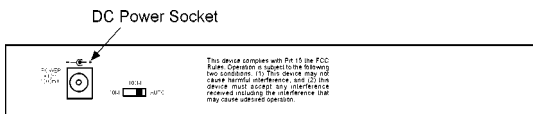
Dual-speed Hub Technology

Dual-speed hub is designed to support connections with different speeds in the same hub. It makes a network planning simpler, especially when an environment is containing 10Mbps Ethernet and 100Mbps Fast Ethernet technologies. It also allows a smooth migration from an Ethernet network to a Fast Ethernet network.

A dual-speed hub is actually equipped with one 10Mbps repeater and one 100Mbps repeater in one hub unit. Each repeater serves one shared network segment. The repeater receives transmissions from any of its ports and retransmits them to all its other ports. The TP port of the hub can auto-sense the speed (10M or 100M) of its connection and switch to either 10Mbps shared segment or 100Mbps shared segment automatically. The internal design of a dual-speed hub is illustrated as follows:



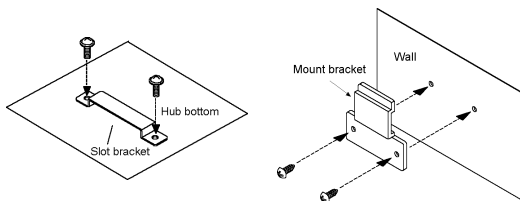
The power socket for the AC power adapter is located on the rear of the hub as shown below:



Mounting the Hub

The hub can be placed on a desktop as a stand-alone unit. It also can be mounted on a wall. The following procedure describes how to mount the hub onto a wallboard or wood (a stud, heavy wooden paneling, etc.) using the wall mount kit supplied in the hub package:

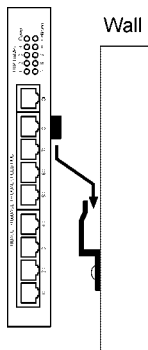
1. Using the slot bracket and two washer-head screws in the wall mount kit, screw the slot bracket onto the bottom of the hub in any one of the four directions.



2. Using the mount bracket and two pan-head self-tapping screws in the kit. Screw the mount bracket onto the wall.

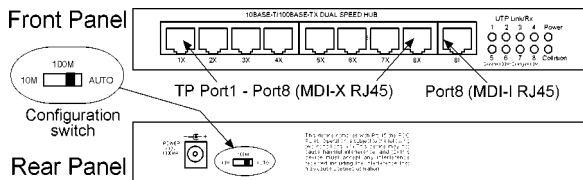
3. Place the hub against the wall so that the mount bracket fits into the slot bracket on the back of the hub.
4. Slide the hub down until it hangs on the mount bracket.

Slide the slot bracket
into the mount bracket
on the wall.



3. Making Network Connections

Network Connectors and Rear Switch



The hub provides 8 dual-speed TP ports. Each can support one connection to either a 10BASE-T Ethernet device or a 100BASE-TX Fast Ethernet device using 2-pair UTP cable. One configuration switch is located on the rear panel. The switch is used for setting the operation mode for the hub. Three selections are available as follows:

AUTO mode	Set all TP ports to be auto-sensing ports
100M mode	Set all TP ports to be 100BASE-TX ports
10M mode	Set all TP ports to be 10BASE-T ports

For AUTO mode, each TP port can support either the Ethernet 10Mbps connection or a Fast Ethernet 100Mbps connection with auto-sensing the connection speed. For 100M mode, the TP port supports connection to a 100BASE-TX Fast Ethernet device only. For 10M mode, the TP port supports connection to a 10BASE-T Ethernet device only.

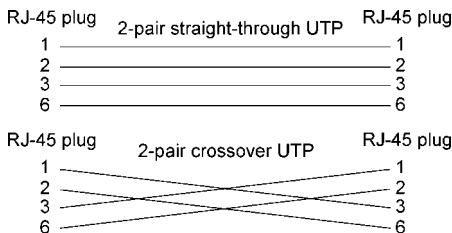
RJ-45 Connectors

Each of Port #1 to Port #7 provides one RJ-45 connector, which are implemented as MDI-X jack. An MDI-X jack is designed with internal crossover function. The function allows a connection to a computer using straight-through UTP cable. The Port #8 provides one MDI-X RJ-45 connector and one MDI-I RJ-45 connector. Only one connector can be used at the same time. The pin definitions for MDI-X jack and MDI-I jack are as follows:

<u>PIN#</u>	<u>MDI-X Jack</u>	<u>MDI-I Jack</u>
1	Rx+	Tx+
2	Rx-	Tx-
3	Tx+	Rx+
6	Tx-	Rx-
4,5,7,8	NC	NC

UTP Cables

For connecting to a 10BASE-T Ethernet device, a 2-pair Category 3, 4, or 5 UTP cable can be used. For connecting to a 100BASE-TX Fast Ethernet device, only 2-pair Category 5 UTP cable can be used. With different wiring, two types of the UTP cables are defined as follows:



Connecting to Computers

The RJ-45 connectors labeled **1X** to **8X** can be used for connecting to the network adapter installed in a computer. The network adapter can be a 10BASE-T adapter, a 100BASE-TX adapter, or a 10/100 dual-speed NWay adapter. The following table lists the cables used for connecting to different network adapters:

<u>Adapter connected</u>	<u>UTP cable used</u>	<u>Maximum length</u>
10BASE-T adapter	Category 3, 4 or 5	100 meters
100BASE-TX adapter	Category 5	100 meters
10/100 NWay adapter	Category 5	100 meters

The link from the hub to a 10/100 NWay adapter card is established as a 100M connection.

Connecting to Network Switch Ports

The hub can support connections to Ethernet switches or Fast Ethernet switches. Make sure the MDI-X to MDI-I connection rule is followed when using straight-through UTP cable. The following table lists the cable and the cable length allowed for the connections to different switch devices:

<u>Switch connected</u>	<u>UTP cable used</u>	<u>Maximum length</u>
10BASE-T switch port	Category 3, 4 or 5	100 meters
100BASE-TX switch port	Category 5	100 meters
10/100 NWay switch port	Category 5	100 meters

The link between the hub and a 10/100 NWay switch port is established as a 100M connection.

Connecting to Hubs

The following table lists the types and the maximum number of hub connections depending on the configuration switch setting:

<u>Configuration</u>	<u>Types of hubs</u>	<u>Connections</u>
10M mode	10BASE-T hubs	up to 8
100M mode	100BASE-TX Class II hub	one
100M mode	Dual-speed Class II hub	one
AUTO mode	10BASE-T hubs	up to 8
AUTO mode	100BASE-TX Class II hub	one
AUTO mode	Dual-speed Class II hub	one

The cables used and maximum distance allowed for a hub connection are:

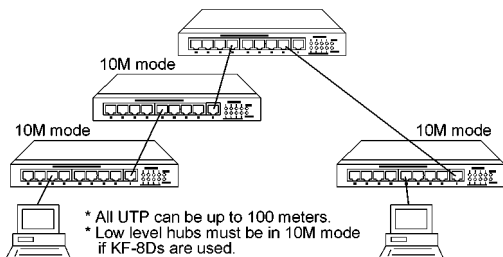
<u>Hub Port connected</u>	<u>Cable used</u>	<u>Distance</u>
10BASE-T hub port	Cat. 3,4,5	100 meters
100BASE-TX hub port	Cat. 5	5 meters
Auto-sensing hub port	Cat. 5	5 meters

Connecting to 10M Ethernet Hubs

KF-8D can support up to eight 10M Ethernet hub connections. The Ethernet connection rules should be followed as follows:

1. Between any two end-nodes in a collision domain, there may be up to five cable segments and four intermediate repeaters (hubs or other repeaters).
2. If a path between two end-nodes contains five cable segments, no more than three populated segment can exist in the path.

The following figure illustrates a connection example:

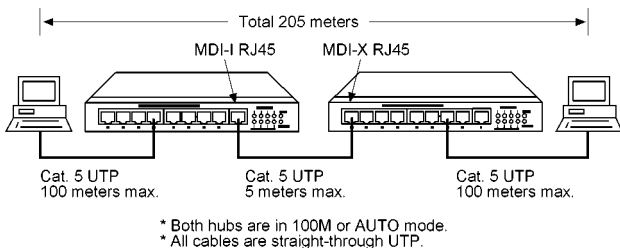


Connecting to a Fast Ethernet Hub

Since the KF-8D is designed to comply with IEEE 802.3u Class II repeater specifications, it can support one connection to another 100BASE-TX Class II hub. The connection rules are:

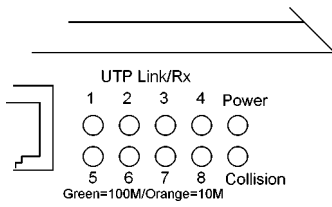
1. The other hub which is connected to KF-8D must comply with IEEE 802.3u Class II repeater specifications.
2. No more than two hubs can be cascaded in the network.

The following figure illustrates the maximum Fast Ethernet network expansion using two KF-8D hubs:



4. Interpreting LED Indicators

The following figure shows the locations of the LED indicators:



Power LED: indicates the status of the repeater power source.

<u>State</u>	<u>Indication</u>	<u>Interpretation</u>
On	Normal	The power of the hub is on.
Off	Problem	No power is being supplied to the hub.

Collision LED: indicates the collision detected by the hub. The LED is normally off and it blinks when there are collisions on 10M shared segment or 100M shared segment.

Link/Rx 1-8 LED: indicates the link status and receiving activities of port #1-#8.

<u>State</u>	<u>Indication</u>	<u>Interpretation</u>
On	Normal	Good link and no incoming packets (Green color: 100M link, orange color: 10M link)
Blink	Normal	There are receiving activities on the port. (Green color: 100M link, orange color: 10M link)
Off	Normal	No active link to another device